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REPORT

OF

THE OFFICER OF HEALTH

FOR MANCHESTER.

Presented to the Health Committee, November 22nd, 1869.

MANCHESTER:
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1870.

TO THE CHAIRMAN AND MEMBERS OF THE HEALTH COMMITTEE.

Gentlemen,—At the commencement of a new municipal year, the Officer of Health proposes, in place of the usual Report, to give a retrospect of the work accomplished during the year just concluded and the few preceding months, which measure the term of the Health Committee's existence.

The attention of the Committee was primarily directed to its own organization,—to that of its staff of officers,—to an investigation of the work which was before it, and to a consideration of the order in which that work should be undertaken.

By the division of the city into four sanitary districts, and the appointment of a Sub-committee to each, the members have been brought into intimate acquaintance with many matters affecting the sanitary condition of their respective districts, which has enabled them to bring a practical and independent judgment to the consideration of the many important questions which have occupied the general Committee.

Since the appointment of the Committee, 285 distinct properties have been visited and carefully inspected by the Officer of Health and the inspector, and have been reported to the Committee. Of most of these properties accurate surveys have been made and plans prepared, with duplicate plans exhibiting such alterations in the properties as appeared to be practicable, and to be necessary to bring them into a better sanitary condition. A considerable proportion of these properties have been visited by the respective Sub-committees.

In addition to the properties reported a large number have been inspected, the condition of which was not considered by the Officer of Health to be such as required the interference of the Committee. It is necessary to state that in all or nearly all of the properties reported, cases of fever—in some instances several cases—had occurred in some of the dwellings, and which were apparently traceable to the bad sanitary condition of the premises.

In those instances in which the fever seemed to be of accidental origin (as by infection), the premises, after examination, were simply disinfected and ordered to be cleaned.

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Reports of fever cases attended by the public medical officers acting within the city have been furnished weekly to the Officer of Health, and certainly these have led him to the worst and most unhealthy portions of the city; and it is his belief that it was not difficult in the majority of cases to connect the occurrence of fever with the condition of the premises in which it arose.

The weekly returns of the registrars of the registration sub-districts within the city have also assisted the Officer of Health in localising such cases of fever or other infectious diseases as have terminated fatally in the private practice of medical men.

During the past municipal year, 1,019 houses in which fever and other infectious diseases had occurred have been disinfected; 499 by inspectors of the Nuisance Committee, from November 9th, 1868, to June 7th, 1869; and 520 by the disinfectors of the Health Committee, from June 7th to November 5th of the present year.

The house disinfection is effected by chlorine generated on the premises. In all cases when it is practicable the inmates are temporarily removed and the houses filled with the gas, the bedding and clothes being specially treated. Full time is allowed for its action before the doors and windows are opened and the occupants re-admitted. In cases where the occupants cannot be removed in consequence of existing sickness, the gas is liberated in smaller quantities and continued during the course of the disease. Arrangements have also recently been made by which the privies and the utensils receiving the excreta of infected persons may be treated with carbolic acid.

At the request of the Officer of Health, reports are now furnished him daily of the cases of fever admitted into the Manchester Royal Infirmary, and the premises from which the cases have been removed are at once visited and disinfected. If the medical officers of other public institutions, and more especially if the medical officers of Boards of Guardians acting within the city would kindly furnish statements each morning to a messenger from this office of the residences of such persons as they may be called upon to attend, suffering from fever or other infectious diseases, great benefit in checking the spread of the diseases would no doubt result from the operations of your officers. It is hoped that the time is not distant when private practitioners will feel the desirableness of making similar communications.

Since the first organization of the Committee, 187 cellar dwellings have been closed as unfit for human habitation. Nearly all these were single cellars, that is, consisted each of a single room. In nearly every instance they were damp, dark, and situated deep in the ground, being approached by flights of six, seven, or eight steps. The ceilings were usually low, and there was no adequate ventilation. In many of the cellars cases of fever had occurred shortly before they were condemned by the Committee. The cellars which have been closed constitute a very small proportion of those which have been visited and inspected, only such having been reported to the Committee as from special circumstances seemed incapable of so much improvement as would render them habitable. As by the Bye-laws of the Council no cellar which has once been closed as unfit for human habitation can be re-opened for this purpose, considerable forbearance has been exercised in dealing with them. The Committee, however, in this matter have only carried forward the proceedings of their predecessors of the Building and Sanitary Committee, who from year to year closed such cellars as appeared to be in an unsatisfactory condition. Looking to the advance of opinion on sanitary subjects, it may perhaps be safely predicated that in very few years there will be no cellar dwellings in England. In some large towns, as Birmingham, there are at this time no cellar dwellings. Nevertheless, a moderate and gradual exercise of the powers of the Committee will probably be able to effect such salutary changes in this respect as may be requisite in Manchester, without materially or suddenly trenching on the interests of their owners.

So numerous were the inhabited cellars in Manchester a few years ago, that it might well have been considered a city of cave-dwellers, with this disadvantage in comparison with Ethiopia in ancient times, that the modern caves were all underground, whilst those of olden time were excavated above the level of the roads. To the young, light is as necessary for healthy development as air; and when we consider that even the air which finds access to these sunken habitations is obtained from the level of the sewer openings, and that, in many instances, the invigorating rays of the sun never reach their interior, it can excite no surprise that the blanched and flabby children, of which they are the homes, grow up into the stunted men and women that crowd the streets of manufacturing towns.

In the first report presented by the Officer of Health to the Committee, an attempt was made to divide the diseases to the prevalence of which the heavy mortality of Manchester is chiefly due, into two classes, the preventible and the non-preventible,—the latter, however, necessarily including many diseases not absolutely beyond prevention, but the causes of which are not within the control of the Corporation; such, for example, as those arising from intemperance. As exemplifications of the former, certain febrile diseases of a dangerous character, of the zymotic class, and which, with the exceptions furnished by certain forms of fever, seem always to originate in a specific virus and to be propagated by communication from one individual to another, were selected as types, and the extent to which they nominally prevail in Manchester was shown in a comprehensive series of tables. With the exception of some forms of disease classed under the general denomination of fever, and which appear not unfrequently to originate in the poisonous gases and effluvia emitted from cesspools and drains, or to be sometimes generated in over-crowded dwellings, we have no knowledge of any source or mode of origin of the remaining diseases of this type—viz., small-pox, scarlet fever, measles, diphtheria, and whooping cough—except that of infection, by which we mean the reception into the system of a person previously unaffected, of a morbific matter which has been generated within and has passed from the body of another person suffering from one of the special forms of disease indicated. These special forms of disease are capable of reproducing themselves almost infinitely, but whether by germs, which is the prevailing theory, or by some more subtile form of organic matter, is unknown, and for the purpose of this report unimportant, as the practical significance and bearing are the same. If a person suffering from one of these diseases is capable, by the breath, by perspiration, or by the other excretions of the body, of infecting and charging the atmosphere surrounding him, so that it shall become poisonous to others about him and dangerous to their health and lives, and especially if the circumstances of his position are such as to interfere with his own chances of recovery, then it is clear, both in his own interest and for the public safety, that he should be isolated, and should, if possible, be placed under circumstances where skilled attendance, careful nursing, proper diet, ample ventilation, and such appliances as may be conducive to his recovery may be brought to his aid.

It is, unfortunately, a necessity of our social organization that there shall be one rule for the rich and another for the poor; but it is clearly the duty of the former, though it may perhaps be maintained that it is that of the entire body-politic, when suffering is brought to the homes of the poor of a character to endanger the entire household, to reduce the danger to a minimum and to make such provision as shall protect the household, whilst chances of recovery are given to the sufferer himself approximating to those enjoyed by his more fortunate brethren. In all matters relating to Public Health, however tardy we may be in learning the lesson, it fortunately happens that duty and interest go together. The suffering of the poor is the danger of the rich. The disease that lurks for a while in the hovel or the crowded court steals abroad and reaches the rich man's door. But it is here that the circumstances of the two make a difference. The rule for the rich is in his ample dwelling to isolate the sufferer,—to exclude from his presence those whom the pestilence has spared,—to destroy by disinfectants the pestilence as it is emitted, or to dilute it to the utmost by large draughts of air; though how unavailing even all this may be to save the stricken one, there is scarcely a family that has not a mournful remembrance. How is it, then, in the dwelling of the poor, with its small, stifling rooms, or perhaps single room, in which every member of the family lives and sleeps, ventilated only by the sickening and mephitic atmosphere that has swept over a hideous array of cesspools, carrying poison to the poisoned? Is it a matter of wonder that nearly one-sixth of the entire mortality of Manchester should be caused by five infectious, pestilential diseases? In the city of Manchester (excluding Cheetham), during the seven years, 1861-7, out of a total of 70,399 deaths from all causes, 10,443 occurred from the five or six infectious diseases named. In the ten years, from 1851 to 1861, the deaths within the registration district of Manchester from the five infectious diseases were 10,945, and in the registration district of Chorlton 5,604; a total of 16,549 persons. The significance of these numbers may be best realised by comparing them with the population of some considerable towns. The latter number then is equal to the entire population of Lancaster in 1861; three thousand more than the entire population of Accrington or of Hyde; more than the population of Gloucester or of Hereford.

To show how very large a proportion of these deaths from infectious diseases occurred amongst the very poorest class, it may be stated that during the seven years 1861-67, not fewer than 31,575 persons suffering from febrile infectious diseases came under the treatment of the medical officers of the public medical institutions connected with the city, and of the Poor-law medical officers of Manchester and Chorlton, a number equal to the population of Chester. There can be no doubt that, with very few exceptions, persons suffering from infectious disease who require to avail themselves of Poor-law or charitable medical attendance have not such home accommodation as is desirable for themselves or for the protection of others. But this number of cases, large as it is, is equivalent to only half the number of deaths recorded from these infectious diseases, so that there must be quite as many more cases that do not come under public medical treatment at all; and of this number a very large proportion of cases must occur in families whose position is but little raised above those in receipt of eleemosynary aid, and to whom the danger of infection is as great, and the want of conveniences and comforts to the sick as injurious, as in the class below them. To check the spread of these diseases, then, early removal of the sick and thorough disinfection of their dwellings is all-important; this disinfection including bedding, clothes, garments, and drapery of all kinds. A very efficient mode of disinfecting bedding and drapery is by the application of heat, a temperature quite insufficient to be injurious to the texture of the articles operated on having been found, in the researches of the late Dr. Henry, of Manchester, to be quite sufficient for the destruction of any infectious matter. Suitable ovens or stoves for the purpose could very easily be constructed, in any of the yards belonging to the Corporation. Such stoves have for some time past been in use in Dublin.

Though very many of the poor are glad to avail themselves of the accommodation afforded by the public hospitals, yet it sometimes happens that very obstinate resistance is offered to the removal of persons, even those suffering from small-pox, and the greatest recklessness is exhibited in respect to the spread of the disease to others. By the 26th clause of the Sanitary Act of 1866, it is provided that "where a hospital or place for the reception of the sick is provided within the district of a nuisance authority, any Justice may, with the consent of the superintending body of such hospital or place, by order on a certificate signed by a legally-qualified medical practitioner, direct the removal to such hospital or place for the reception of the sick, at the cost of the nuisance authority, of any person suffering from any dangerous contagious or infectious disorder, being without proper lodging or accommodation, or lodged in a room occupied by more than one family." Like a good deal of sanitary legislation, this clause is so framed as to be nearly inoperative; and in a communication recently made to the Sanitary Commission of Inquiry now sitting, your Officer of Health ventured to recommend that in any future Act, power be given to officers of health and to Poor-law medical officers to direct the removal to hospital of persons suffering from dangerous infectious diseases, even when lodged in a room occupied by *not more than one family*, and to dispense with the necessity of obtaining the order of a magistrate prior to the removal.

Officers of health and public medical officers, occupying positions so responsible as those undertaken by Poor-law medical officers, would be better judges than a Justice of the Peace of the necessity of removal, and a great deal of time, often of the greatest importance, would be saved. Then again, the rooms occupied by the poor are generally small, and though there may be several families in a house, yet it is not usual for more than one family to occupy a single room. Great risk, however, is incurred by the occupants of the entire dwelling.

During the investigations which led to his first report, the Officer of Health was struck with the small amount of hospital accommodation provided in Manchester in comparison with the large number of cases of infectious disease constantly existing within the city, and he felt it his duty to give this considerable prominence in his report. It has been shown that 36,575 cases in seven years represent scarcely more than one half the number of infectious disease that must have occurred within the city during that period. If we average the deaths at one for each six cases, then during the seven years 1861-7 there will have occurred on the average, in each year, 8,951 cases, and for these the entire hospital accommodation appropriated at the time of the report amounted to 187 beds. From the three diseases—typhus fever, scarlet fever, and small-pox—there died in the city of Manchester during the sixteen years, 1851 to 1867, not less than 17,571 persons, or an average annual number of 1,032. As nearly as can be ascertained, 178 of these deaths occurred annually in the public hospitals, leaving the large balance of 854 deaths which must have occurred in every one year at the homes of the patients. It is quite clear, then, that the hospital accommodation provided less than two years ago, and which is practically the same at present, is quite insufficient for the number of cases of these three diseases alone, which normally exist in Manchester, even if the estimate be limited to those of so serious a form as to run to a fatal termination. But the fatal cases of these three diseases represent an absolute number of not less than five times the amount. Now, during the seven years 1861-7, the average annual number of deaths from small-pox, scarlet fever, and typhus fever within the city was 973, which is equivalent at the least to 4,865 cases ; so that in the seven years an aggregate number of 34,000 persons have gone through these terrible preventible diseases in Manchester.

There are only three hospitals in or connected with Manchester into which febrile infectious diseases are received, viz.:—the Manchester Workhouse Hospital, New Bridge-street; the Chorlton Union Hospital, Withington; and the Manchester Royal Infirmary.

The Manchester Workhouse Hospital has 90 beds set apart for these diseases, and a total capacity for such cases equivalent to 160 beds. The Chorlton Union Hospital has 60 beds set apart, and a total capacity of 100 beds for the same. The Manchester Royal Infirmary appropriates 32 beds to these cases, and the Board undertake to provide 70 beds. The total number set apart therefore is 182, total capacity 330.

The small extent to which even this scanty accommodation is made use of may be judged if we multiply by five, as in the other estimates, the number of deaths which have occurred therein to represent the number of cases received. The hospital authorities do not at present publish such statistics as will enable us to arrive at any closer estimate. The consideration of any but the three diseases, small-pox, scarlet fever, and typhus fever, is at present purposely excluded. The average annual number of deaths from these three diseases, during the seven years 1861-67, were—

In the Manchester Royal Infirmary...............	34·0.
In the Manchester Workhouse Hospital	95·7.

It is believed that the number dying from these diseases annually in the Chorlton Union Hospital, at Withington, is about 42, giving a total of deaths in all the three hospitals of 171 ; but as the area of the Chorlton Union extends considerably beyond the boundary of the city, it is probable that the estimate of deaths from city cases admitted is in excess of the actual number.

Adopting, however, the entire amount, we get 855 cases as the total number admitted annually for treatment in all the hospitals available for such cases to the population of Manchester, out of a total number of 4,865 cases.

The zymotic cases admitted into these hospitals may, however, be practically limited to two forms of disease—fever and small-pox, as it appears that during the seven years, 1861-7, only six deaths occurred from scarlet fever in the Manchester Workhouse Hospital—rather less than one death annually; and in the Manchester Infirmary sixteen deaths, or rather more than two annually. It is probable that the deaths from scarlet fever in the Chorlton Union Hospital will also be very limited.

From the smallness of the numbers, it may reasonably be assumed that the deaths represented by them were those of adults, a conclusion confirmed by inquiries made by the Officer of Health at the respective hospitals. It appears, then, that the three great hospitals situated in or connected with Manchester afford accommodation only so far as infectious febrile diseases are concerned to adults, and practically to those suffering from small-pox or fever, and that when any of the five or six common zymotic diseases attack the younger members of the community—say children under ten years of age—no provision exists for their isolation from the other children in the families to which they respectively belong, nor for securing to them such accommodation and conveniences as are in many cases necessary for their recovery; for it can scarcely be considered that the five beds appropriated to these cases in the Children's Hospital in Bridge-street—the only hospital which receives such cases occurring in children at all within the city—do more than call attention to the want of such accommodation, and yet in the ten years, 1851-60, the deaths of 8,760 children under ten years of age were registered in Manchester from six infectious febrile diseases, of which number 7,278 were under five years of age. It is the opinion of the Officer of Health, and was urged by him immediately on his appointment, that the most pressing sanitary necessity of Manchester is the establishment of receiving houses or small local hospitals in different parts of the city, to which children could be at once removed on becoming affected with any serious infectious and zymotic disease. That this could be done in connection with the children's dispensaries and hospitals already existing, could be easily shown. As however the Officer of Health is engaged on a report on the diseases and mortality of children, the further consideration of this matter, which may probably require external aid, is deferred for a short period.

At a very early period of his appointment the Officer of Health placed himself in communication with the Poor-law Medical Officers acting within the city, and with the medical officers of the various medical charities, with the hope of inducing them to furnish him daily with such information as would enable him to become acquainted, immediately on their occurrence, with such cases of infectious disease as might come under their treatment, and for that purpose furnished them with printed forms and stamped and directed envelopes. It is presumed that the excessive occupation of the time of these gentlemen has interfered with the carrying out of a plan in which some of them readily concurred.

In reference to existing infectious disease, the Officer of Health is of opinion that very much may be done, and that something has already been done, to lessen its amount, and ultimately to extinguish it altogether, or nearly so, by direct action; but this would require the assistance of a larger staff of inspectors than he has at present command of. He is of opinion that the city should be divided into districts, not too large, to each of which an inspector should be appointed, whose duty should be to make a daily inspection of his district, to report all injurious accumulations of effete matters, whether in cellar areas, ashpits, or waste ground;—who should see that streets, courts, passages, &c., were in a proper state of cleanliness, that no accumulations of foul water from stoppage of street grids, &c., were allowed to continue;—who should endeavour to ascertain the occurrence of any infectious disease within his district and report the facts to the Officer of Health;—whose duty it should be to disinfect the houses in which such diseases had appeared, and to procure the frequent removal of the disinfected excreta, and generally perform such duties as, from time to time, the Officer of Health should direct;—that in his district he should endeavour to arrange for the temporary removal of the healthy occupants of an infected dwelling until it has been thoroughly disinfected, and the bedding and clothes stoved when the patient has been removed; and that suitable stoves be constructed in a few parts of the city for the latter purpose, the clothes being conveyed in a small, suitable van.

In succession to the discussion of zymotic infectious diseases actually existing, and the prevention of their extension, the consideration of their exciting or predisposing causes naturally follows. The exciting causes of all, except one, have been stated to be invariably, so far as we know, infections; and this one, after having been once excited by other causes, is propagated also by infection. The predisposing causes are all such as lower the general tone and condition of the body. They thus assist the action of the exciting causes, not only by lessening the power of resistance that should be possessed by a healthy body, but probably also by promoting the formation within the system of matters prone to undergo that peculiar and special fermentative change, the full development of which constitutes a special form of zymotic disease. Among the chief predisposing causes of zymotic disease is that compound of gases, vapours, and organic effluvia (if not even containing organised forms), which arises from decomposing human excreta. Within an exceedingly brief period after they have left the body these matters undergo changes attended with the elimination of products eminently injurious to human health. As these matters are necessary to the soil by the produce of which he lives, and as man was not intended to live in a simple state of nature, so have they probably been made as offensive as possible, that he may be induced to remove them to their proper position as early as possible; and the breach of the natural law imposed upon him has been made punishable by disease of the most distressing character, often terminated by death; for it is a remarkable circumstance that whilst nearly all other zymotic diseases affect chiefly the very young, fever is especially the disease of adults. If anything in sanitary science has been proved by cumulative evidence, it is that the products of the putrefactive decomposition of excrementitious matters are both predisposing and exciting causes of fever. It is a subject on which all or nearly all sanitary inquirers are agreed, and the experience of the Health Committee in Manchester can have left little doubt of this truth on the minds of its members.

In many parts of the city the streets are wide and well paved and sewered, and the houses fair to look upon, but the passages behind them reek with ammonia, sulphuretted hydrogen, and the nameless odours that seethe up from the pestilent messes that stud their length. It cannot now be necessary to go over the discussion as to the best mode of meeting these evils. The Committee decided on certain principles fairly worked out both by reasoning and observation. The first was, that inasmuch as putrefaction is promoted by the presence of moisture, the ashpits and privies should be kept dry; and they resolved that they should be covered up from the rain, and that as far as practicable all house slops and other liquids should be excluded, and they adopted a form of yard grid and trap, easier for the occupants of the houses to use than the receptacle (the privy) in which such liquids had hitherto been deposited. Secondly, they resolved that the excreta should from day to day be covered over with ashes, as these in common with all porous bodies possess the power of condensing within their substance ammonia, sulphuretted hydrogen, and other gaseous matters; indeed their power of condensing ammonia is superior to that of dry earth. It is certain that they must also afford a resistance to the passage into the air of the organic matters which are more injurious than the gases themselves. As the disinfecting power of ashes is to a large extent dependent on their dryness, the Committee proposed to divert the urine from the solid excreta. The delivery of the dry ashes over the excreta may be effected either by an inclined plane at the side of the privy or by having a hinged and lift-up seat or step.

The plan of a dry ashpit and privy with ash-covered excreta and diverted urine was put into practice at the Town's Yard in Dickenson-street. An additional reason for diverting the urine from the other excreta was, that the former is the most ready to enter into putrefaction of any liquid known, and immediately communicates its action to the other matter. It was found that the entire suppression of the effluvia of the excreta could not be effected by such an amount of ash as household use afforded, and that in summer and autumn, when the production of ashes is very small and the high temperature both promotes putrefaction and increases the tendency of the products to ascend, the smell of the ashpit and privy became very offensive, and was strongly perceptible in the adjacent house. As the ashpit was tolerably deep and the smell was perceived strongly both in the privy and in the lower and upper rooms of the adjacent house, the doors and windows of which fronted the privy, it was obvious that independently of other known considerations, whether by currents or by their own volatility, these matters constantly ascend, a fact which must be patent to all who have stood at the open bedroom windows at the backs of the houses which overlook the double rows of cesspools to be found in almost every part of Hulme, and in most other parts of Manchester. How any question as to the tendency of these matters to ascend, with the evidence to the fact afforded by the senses for any number of years past, may well be matter of astonishment.

Recognising that tendency, it is evident that if afforded an outlet at the highest point (as nature abhors a vacuum), the displacement must be made up by the advent of denser air at a lower point. In other words, if a vent be given for the effluvia at the top of the privy, pure air will enter at the seat to replace the effluvia-laden atmosphere which is passing away. No additional weight need be given to the argument by considerations relating to the diffusion of gases, or to the warmer temperature which undoubtedly exists in privies which are in ordinary and proper use. Necessarily the frequent reception of warm ashes, and of matters having the temperature of the human body, must keep the air in the privy at a higher temperature than that external to it. It was resolved to test the principle by carrying a flue or shaft from the top of the ashpit, in Dickenson-street, to an altitude above the eaves of the adjoining house. The experiment was completely successful; from the time of its erection no offensive smell has been perceived in the privy during any of the visits of the Committee or its officers, and the occupants of the adjacent house affirm that all nuisance from the privy to themselves has ceased.

Since the alterations effected in the ashpit in Dickenson-street, a number of ashpits and privies on property belonging to the Corporation, in Lower Tebbutt-street, have been re-constructed on similar principles, in accordance with plans furnished by the Health Committee, and with equally satisfactory results. These places were horribly offensive in their original state, but are now nearly free from smell. Connected with these latter there is one remarkable fact. Two of the privies in the centre of the block were found to be very offensive, and this was mentioned particularly by a gentleman on the Gas Committee, to which latter body the property belongs. It was found, on examination, that the flue or shaft from these two privies, which had a central ashpit, had by an inadvertance or misunderstanding been carried, not from the top of the ashpit, as in all the other cases, but from a point midway down, nearly on a line with the seats, and the smell therefore escaped as much by the seat as by the shaft. When this was corrected, by making the opening to the shaft from the top of the ashpit, the nuisance at once ceased. The same thing has been observed in several other instances, and has been amended by the same method of alteration.

No stronger evidence could be given of the tendency of the gases and other matters eliminated to ascend and to occupy the highest part of the ashpit. The proper construction of the shaft is therefore a matter of considerable importance.

It is self-evident that if the shaft gives a passages to the evolved matters at all, its proper function should be to deliver them into the general body of the atmosphere, where the winds will diffuse them and render them innocuous by mere dilution, independently of the oxidation they will rapidly undergo. They should be carried high above the bedroom windows, and therefore it is that the Committee has required the shafts to be carried above the eaves of the houses.

As the result of constant observation, the Officer of Health is satisfied that the draught in the ventilating shafts is strongest during the months of summer and autumn, as might have been expected; but then this is the very time when it is most required.

At this time a considerable number of ventilating flues or shafts have been constructed, chiefly in connection with new houses, and are found to give great satisfaction to the tenants. The Officer of Health has made careful inquiries into the health of the occupants of the houses, both old and new, to which the new form of ashpit has been adopted, and he has found where the latter has been properly constructed that not a single case of diarrhœa or of fever has occurred in the families of any of the occupants, although the former disease prevailed to a considerable extent in neighbouring families.

The Committee has also decided to limit the number of houses to each privy, or, in other words, to increase the privy accommodation. There are numerous cases in the city in which the occupants of five, six, and even a greater number of houses have only one privy for their accommodation, the consequence being that they use vessels in their own houses. Of this the Officer of Health as well as several member of the Committee have been assured by the occupants themselves. To medical men generally this is well known, one of the most disagreeable circumstances connected with their morning visits to a certain class of houses being the disgusting smell which assails them on their entrance. Of course it is not the fault of the people themselves, as they have no sufficient accommodation; but how injurious and how utterly demoralizing such a state of things must be may easily be conceived. It is true that the houses to which these common privies are appropriated are what are called back-to-back houses, but the occupants are sufficiently numerous to be compelled to act in the manner stated where so small an amount of accommodation is provided. Back-to-back houses are no longer allowed by the Council to be erected, and it is required by the Council that every newly-erected house shall be provided with a distinct privy and ashpit.

It is unfortunate that privies and ashpits should have to be used in common at all, as there can be no doubt that very often they are the means of disseminating the poison of such diseases as small-pox, scarlet fever, typhus, and other zymotic diseases. It is the constant custom to throw the dejections from the bowels, bladder, and throat of persons suffering from these diseases into the common ashpit or privy, and these are the matters which contain the specific poisons in their greatest intensity. A very grave risk is incurred by every person who visits the privies after this has been done, and it is within the experience of the Officer of Health that small-pox has repeatedly been propagated in this manner.

The danger would be very largely diminished if the ashpits were frequently emptied, instead of large accumulations being allowed to be formed within them as at present.

Frequent removal is compulsory under what is called the receptacle system, which is in partial use at Rochdale. In that town small round or oval tubs are placed immediately under the privy seats, and receive nothing but the excreta. They are removed and replaced by fresh ones once or twice a week. It cannot be otherwise but that in summer these receptacles must be very offensive, and it is admitted by the gentlemen who are carrying out the scheme that if the contents of the tubs could be covered with ashes, *in situ*, and a ventilating shaft be adapted to the arrangements, these additions would be great improvements.

In the report to the Town Council of Rochdale, dated August 27th, 1869, and signed Edward Taylor, Chairman of Sanitary Committee—"On the Experimental Trial for the removal of Nightsoil and Ashes," it is stated that at the date of the report 342 privies had been altered to the receptacle system (in the report called the box-and-ash system), and that 80 more were in course of alteration. At Rochdale the receptacles when sufficiently filled are removed to a covered van or truck and conveyed to a store, in which the contents are mixed with fine ashes, a little carbolic acid, materials to fix the ammonia, enriched with some other additions, and worked-up into a manure. The ashes and cinders from the several houses in connection with the receptacles are thrown by the occupants daily into a tub or cask placed near the receptacles, and are also conveyed to the storehouse or manufactory, where they are screened; the fine ash mixed with excreta, and the cinders and masses of slag or bass used for other purposes. The receptacles when removed are covered with well-fitting lids, and no nuisance whatever attends their removal, although this is effected in the day-time. The entire arrangements were inspected by the Chairman and one of the members of this Committee and by the Officer of Health. The manure is fairly free from any offensive odour; it is sold for £1. per ton. The manufacture is stated in the report to be profitable, including all cost of collection; and Mr. Alderman Taylor, by whose efforts the system has been established, is sanguine that it will be still more so.

So desirable and important is the frequent removal of the human excreta from the precints of houses, that the Officer of Health would be glad to see the receptacle system adopted in Manchester; with such modifications as the experience acquired both in Manchester and Rochdale may render expedient. He is of opinion that the covering of the excreta with fine ashes from day to day would be an improvement on the system carried out at Rochdale, and that the flue or shaft already adopted in all newly-constructed privies within the city would be effectual for carrying off any offensive odours from the deposited excreta. He feels it also right to say that the receptacle system formed a part of the original plan devised by himself and the City Surveyor, but that existing arrangements did not admit of its being carried out.

As the gases and effluvia eliminated from the contents of drains and sewers are chemically the same, and produce the same physiological effects as those thrown off in ashpits and privies, it is equally necessary as with the latter that they should be conducted above the eaves of the houses, and so be delivered into the general body of the atmosphere for diffusion. The ventilation of drains and sewers has engaged the attention of the Committee during the past year, but no distinct course of action has been agreed upon. As a sanitary question this may, perhaps, rank next in importance to that of ashpits. Several excellent papers have appeared in the medical periodicals during the last year, in which the writers attribute the occurrence of numerous cases of fever to the escape of sewer gases into dwellings; and certainly, during the same period, the outbreak of fever in several localities in this city could only be explained by the Officer of Health on the supposition of the escape of these gases, with which the attacks seemed to have a distinct connection. The deterioration of health produced by the escape of sewer gases, even into houses of a good class, is so much a matter of general experience, that no effort or expense should be spared to free all houses and the lower strata of a city atmosphere from them, and to deliver them freely at the highest attainable elevation.

Not only is fever fairly attributable to their escape in many instances, but diarrhœa is also a frequent and very fatal concomitant. In a report read to the Committee by the Officer of Health, it was shown that in consequence of the levity of these gases, the proper points for ventilation are the highest parts of the sewer system; for clearly, if the gases were heavier than the atmosphere they would make their escape at the lowest parts of the system—the sewer mouths. The Officer of Health has frequently examined the sewer mouths with reference to this question, and he has found that the aërial current is almost always upwards from the mouths, and especially so in warm weather and under low barometric pressure. The power of retention of these gases by the liquid contents of the sewers, or in scientific phrase, the co-efficients of absorption, vary with the atmospheric pressure and with the temperature; hence it is that just before rain, when the barometer falls and the atmosphere is lighter, the sewage gases are most strongly perceived both from street grids and in the interior of houses.

As these gases, then, always seek the highest points of the sewer system, they will always be found in the greatest quantity in the small drains of passages, yards, and houses, which constitute the summits of the system, and from which they escape by every flaw in the pipes or crack in the joints,—by every sink-pipe in kitchen, scullery, or pantry, and by every soil-pipe in a closet.

Proposals have been made, and in some places carried out, for ventilating the sewer system by lofty shafts connected with the main street sewers; but surely this implies a total misconception of the subject and of the scientific questions involved. The main sewers are large and wide, with such an inclination that the liquid contents run freely, rarely remaining sufficiently stagnant for the elimination of large volumes of gas. The sewers receive large drafts of air from their mouths, and the percentage of sewage gas in them is generally so small that men traverse them without difficulty or danger, except under special circumstances. In the narrower and higher drains the inclination is less; the contents are less liquid, being comparatively unrelieved by the falling waters, which, running from streets, give such an impetus to the current in street sewers; the motion is more sluggish; the gases eliminated ascend at once to the blind terminations of the drains, there to work mischief, unless a free exit be given to them into the higher strata of the atmosphere, where they can do no harm. Their escape, then, at these highest points should be facilitated by every possible means; and yet how constantly is this neglected! The soil-pipe of every water-closet ought to have a tube rising from the upper part of the pipe and carried outside the house up to the caves, so that the gases which ascend to the closet may have a ready exit.

Whenever a water-closet is constructed inside a house or in connection with a house, there ought if possible to be an air-space between the closet and the house. Even grids inside a house are objectionable. Except for the convenience of washing, cellars should be constructed without grids and with asphalted floors. No trap as ordinarily constructed is proof against the passage of sewer gases. The water which forms the valve become saturated with the gases (sulphuretted hydrogen, &c.) from below, and gives them off again above into the cellars or other apartments. There is no such thing as permanent retention of gases by water except under pressure. There is constant absorption on the one side, and constant elimination on the other.

The ventilation of drains may be effected partially by connecting by good joints the upper part of the drain with the rain spouts running down from the tops of the houses. As a rule, however, these pipes are very narrow and the connections badly made. A much more efficient ventilation would be effected by connecting by an earthenware elbow-pipe the yard or passage drains with the flues attached to the new ashpits and privies. These shafts, if extensively adopted, would effectually ventilate the whole sewer system at a very moderate expense.

Concurrently with the ventilation of ashpits and privies and of drains and sewers, may be considered that of the houses themselves. Having endeavoured to improve the surroundings of the dwellings, we may next enter the dwellings themselves. Whatever Nature throws off on the completion of or in the performance of a function, is injurious to the continuance of that function. The functions of life are ever completed and are ever renewed, and go on till the machinery is worn out, unless abnormally disturbed. Taking in whatever is required for her work, she uses that which is fit for her purposes and rejects the rest; and as each portion of the daily-renewed machine has fulfilled its object and has lost its power it is rejected with the rest; but in the process they have lost their vitality, and become poisonous to the body which their originals nourished. Disseminated in the atmosphere they become oxidised and resolved into simpler forms of matter, and again become a pabulum of life to a simpler organization, that of plants. Concentrated, they punish the social cause with the most terrible evils. Plague and black death in the past and typhus in the present are the punishment of over-crowding and of unventilated filth. The disposal of the solid and liquid excreta outside the houses having been one problem, that of the breath and the perspiration becomes another, and claims the next attention.

All house ventilation should be effected from the highest parts of the rooms. The air of apartments, heated by fires and lights and by the bodies of the occupants, and loaded with the breath and perspiration of the latter, ascends to the upper portion. Where there are fires the lower stratum of air is removed by the ingress from the door, and is swept onwards to the fireplace; but it is the universal rule, in houses of all classes, to make no provision for the egress of the vitiated upper stratum. It is rare, indeed, to find that the upper sash of a window will let down, though any notion of systematic ventilation by such voluntary means as this would afford may be discarded. Ventilation, to be regular and efficient, must be made a distinct provision. Where gas is used it may be assisted by arrangements for carrying off the products of combustion, but this would not avail in bedrooms during sleep. Any direct communication with the outer air by the external walls would be closed up by the occupants on the first approach of cold weather. The most efficient plan, and the simplest hitherto proposed for small dwelling-houses, seems to be the construction of side flues along the chimneys, into which openings are carried from each apartment. But with the exception of a very limited number of houses of the better class, no arrangement of this sort is found in any of the dwellings in Manchester. Streets of houses are continually being run up without the least provision for ventilation, and it is only by awakening attention in those who are the destined occupants that any hope of amendment exists.

It would appear as if that which is most injurious to man were produced by man,—that in the microcosm of his own body, in the economy of his own system were generated matters the retention of which, either in the body itself or in its vicinity, were poisonous to that body. And what are these matters ? Those which Nature has discarded. In the sustentation of the human frame, she has used certain materials suitable for her purpose, and has discarded the unsuitable and those which have done their work—the effete—whether they be gases and vapours from the lungs and from the skin, liquids from the kidneys, or solids from the bowels ; and yet, with the wise economy which characterises all her actions, she has provided that these very materials, so injurious to human health and life, shall, by the beautiful chemistry of the plant creation, be reassociated into forms affording renewed nutriment to the animal body from which they had previously been rejected. "To the earth," says she, "with the one, to the winds with the other. And if you do not this,—if you keep them festering in narrow passages where the winds come not, or reeking in close rooms wherein the air changeth not,—then will I punish you with disease and with death. The faces of your children shall pale, and the strength of their limbs shall waste ; the bloom of the maiden shall forsake her, and the manliness of your young men shall wither, in the heyday of their youth they shall pass away : and the graves shall be filled with the little ones : for the lesson I taught ye was simple, and ye heeded it not ; ye have kept that which injureth you, and have withheld it from my other domain."

An excellent foundation has been laid in Manchester for a good sanitary system. The streets are moderately wide and are well paved, though an improved method might be adopted for laying the sides adjoining the footpaths, so as to facilitate the flow of water down to the street grids. Channelled stones or asphalt would be much better than the present system of paving the channels with boulders. In front of back-to-back houses all the house slops are emptied into the channels, and the earth between the stones gets speedily washed away, and in the cavities thus made the foul water lodges and must vitiate the air in front of the houses. The streets are well and regularly swept, and underneath them and below passages, and courts and yards, is a ramifying system of sewers, of great depth in most of the streets. An unfailing and abundant supply of pure and excellent water has been furnished to the inhabitants for some years past, and yet, great as are the advantages to have been expected from these, the death-rate has been scarcely affected by them. Dr. Farr, of Somerset House, has kindly furnished the Officer of Health with a table, containing amongst other things a column of the deaths per 1,000 of the population in Manchester annually, from the year 1838 to 1866 inclusive, from which it appears that the average death-rate for the first five years—

1838 to 1842	inclusive, was	33·78
1843 " 1847	"	34·22
1848 " 1852	"	32·80
1853 " 1857	"	32·42
1858 " 1862	"	30·06
1863 " 1866	" (four years)	33·32

From this table it will be seen how little effect has been produced on the general health of the city by what had been done up to 1867.

If the streets are wide, as they are in many parts of the city and especially in Hulme, it is melancholy to see how the space that has been given to the streets has been taken from the passages and yards, and that the interval between the backs of the houses is altogether insufficient for the purposes of ventilation. Nothing less than the introduction of a thoroughly good system in relation to the ashpits and privies and the efficient ventilation of the mains and sewers can save this township from being a constant seat of disease. It is not worse than Ancoats, Angel Meadow, and many parts of the city, but the streets and houses are new, and the latter altogether of a better class. Hulme has the population of a large town, and were the arrangements, conveniences, and provisions for health as good at the backs of the houses as they are in the front, it would be one of the healthiest townships in the kingdom.

By a comparatively recent decision of the Council, a space of 24 feet is now required between the backs of houses in new streets, the good effects of which must be obvious in a few years.

It is by attention to the interior, and to that which is immediately external to the dwellings of the people, that a reduction of the death-rate must be looked for, and the good effects of this course of action have been already observed in the considerable reduction of the rate within the last six or eight months. At no period within the last thirty years probably has it been so low. It is to be feared, however, that the introduction of the relapsing fever, now prevailing in London, may again bring it up to the usual rate.

Commencing with a resumé of the work accomplished during the past municipal year, the Officer of Health in this report has glanced at the work with which the Committee will have to grapple in the current year. Disbelieving in empiricism himself, he has endeavoured to give the reasons for, and to show the reasonableness of, any changes that may be required, as he desires to enlist for the Committee the sympathies and to receive for them the co-operation of both owners and occupiers of property, knowing, as he does, how earnestly the Health Committee sympathises with both parties. As a medical man he has been taught from his earliest youth to regard life and health as the most precious and valuable of all possessions, and it is only from this point of view that he can act with efficiency and advantage to the community. He hopes that before the close of the present municipal year receiving-houses for children will be in course of establishment in different parts of the city; that an improved system of ashpits and privies will have gained sufficient impetus to show the necessity of reconstruction; that sewers and drains will be in course of ventilation; and that for the ventilation of houses public opinion will have ripened.

Of the dreadful mortality amongst the very young, and the special arrangements and care required for their protection, the Officer of Health has nearly completed a comprehensive report. He has fortunately, by the zealous co-operation and practical ability of his officers, of which he cannot speak too highly, been enabled to prepare a series of charts in relation to this great subject of unexampled interest, and the execution of which can scarcely be surpassed.

The question of the consumption of smoke, and the mitigation or abolition of the smoke nuisance, is one which the Officer of Health has always regarded as requiring to be treated otherwise than in a mere report. Believing, as he does, that the philosophy both of smoke production and smoke consumption is little understood by the public generally, he purposes at an early date to invite a conference of engineers, chemists, and smoke producers, to lay before them an exposition of the phenomena of smoke production, and to ask them to agree to certain principles, to be kept in view in any arrangement that may be proposed for its consumption.

The quality of the food supplied to the inhabitants of Manchester is of considerable importance. The Markets Committee, through their very able and active officer, Mr. Page, take care that the animal food and the fruits sold in the city shall be of good quality. The frequent condemnation of unsound meat and fish and of decayed fruit and vegetables, during the past year, bear witness to the active supervision exercised over these most important articles of diet.

The Officer of Health, as an experienced analyst, is of opinion that the apprehensions frequently entertained respecting adulterations are groundless. He believes that ordinarily there is very little adulteration of food practised. He is convinced, from numerous examinations, that flour is much more frequently unsound than adulterated. Some time ago, during a causeless panic, he examined about 20 samples of flour, and in only one did he find any adulteration. The apprehension generally arises from the application of some popular test, tried during the suspicion excited by temporary indigestion, and which only misleads the experimentalist. Of the recent letters which have appeared on the subject, the most sensible one is that dated from Owens College, the writer of which thoroughly understands his subject. He shows that it is not an easy thing to prove the presence of alum in flour or bread. It is a work requiring much skill, pure tests, and the expenditure of considerable time.

The best negative test is the incineration of a weighed portion of flour, till only a white ash remains. If this weigh no more than the normal quantity contained in flour, it is tolerable evidence of the absence of alum.

To assist in carrying out the provisions of the Workshops Regulation Act, the Officer of Health has made numerous visits to various establishments in the city in which women and young persons are employed, and has, he believes, attended to all letters of complaint. The letters, unfortunately, though usually written in a male hand are almost always anonymous, and as the employés usually refuse to furnish any information, and generally declare themselves satisfied, he is compelled in most instances to accept the statements of employers that no breach of the Act has been committed. At all events, his not very courageous correspondents afford him no means of proving the contrary.

From information obtained during an extensive inquiry by Mr. Meade King, it is probable that there are not fewer than 3,000 workshops in Manchester which would come under the Act. It is impossible that the Officer of Health can exercise personal supervision over all these. It is to be regretted that the Bill did not provide Government supervision, as the Factory Inspectors, from the similarity of duties, could best carry out the provisions of the Act, through the instrumentality of subordinate officers.

There are numerous other questions connected with health which will receive their solution during the Committee's operations.

(Signed) JOHN LEIGH,

November 22*nd*, 1869. *Officer of Health.*